IN THE CLAIMS:

1. (Currently Amended) A film forming method for forming a silicon-containing barrier insulating film on a substrate comprising the steps of:

(a) preparing a film-forming gas comprising, (1) at least one member selected from the group consisting of ~~alkoxy compounds having Si-H bonds and~~ siloxane compounds having Si-H bonds and (2) at least one oxygen-containing gas selected from the group consisting of O_2, N_2O, NO_2, CO, CO_2, and H_2O;

(b) converting the film-forming gas into a plasma;

(c) contacting the substrate with the plasma to form the silicon-containing barrier insulating film on the substrate; and

(d) forming a porous insulating film by plasma enhanced CVD or forming a SiOF film, as an interlayer insulating film, directly on said barrier insulating film.

2. (Previously Presented) A film forming method according to claim 1, wherein at least one member selected from a group consisting of N_2 and H_2 is added to the film-forming gas.

3. (Cancelled)

4. (Previously Presented) A film forming method according to claim 1, wherein (1) is tetramethyldisiloxane (TMDSO:$(CH_3)_2HSi$-O-$SiH(CH_3)_2$).

5. (Previously Presented) A film forming method according to claim 1, wherein parallel-plate type electrodes are employed as a plasma generating means, and wherein high frequency power having a frequency of 100 kHz to 1 MHz is applied to an electrode on which the substrate is loaded and high frequency power having a frequency of 1 MHz or more is applied to an electrode opposing the electrode on which the substrate is loaded.

6. (Cancelled)

7. (Cancelled)

8. (Previously Presented) A semiconductor device manufacturing method according to claim 1, wherein said interlayer insulating film has a greater thickness than the barrier insulating layer.

9. (Withdrawn) A semiconductor device in which a silicon-containing insulation film whose peak of an absorption intensity of an infrared rays is in a range of a wave number 2270 to 2350 cm^{-1}, whose film density is in a range of 2.25 to 2.40 g/cm^3, and whose relative dielectric constant is in a range of 3.3 to 4.3 is formed on a substrate.

10. (Withdrawn) A semiconductor device according to claim 9, further comprising a wiring is formed on a surface of the substrate,

wherein the silicon-containing insulation film covering the wiring to come into contact with the wiring.

11. (Withdrawn) A semiconductor device according to claim 9, further comprising:

a wiring;

an insulating film that covers the wiring to come into contact with the wiring are formed on a surface of the substrate; and

an protection layer made of the silicon-containing insulation film formed on the insulating film.

12. (Withdrawn) A semiconductor device according to claim 9, further comprising:

a wiring formed on a surface of the substrate; a lower protection layer that covers the wiring to come into contact with the wiring;

a main insulating film that is laminated on the lower protection layer to come into contact with the lower protection layer; and

an upper protection layer that is laminated on the main insulating film to come into contact with the main insulating film,

wherein both the lower protection layer and the upper protection layer are made of the silicon-containing insulation film.

13. (Withdrawn) A semiconductor device according to claim 12, wherein the main insulating film is made of any one selected from the group consisting of an SiOF film and a porous insulating film.

14. (Withdrawn) A semiconductor device according to claim 9, further comprising:

an lower wiring;

a upper wiring; and

an interlayer insulating film interposed between the lower wiring and the upper wiring are formed on the substrate, wherein the interlayer insulating film is made of the silicon-containing insulation film.

15. (Withdrawn) A semiconductor device according to claim 14, wherein the lower wiring and the upper wiring are connected via an opening portion formed to perforate the interlayer insulating film.

16. (Withdrawn) A semiconductor device according to claim 9, further comprising:

(I) a lower wiring formed on a surface of the substrate (20c);

(ii) an upper wiring; and

(iii) an interlayer insulating film interposed between the lower wiring and the upper wiring, the interlayer insulating film comprising

(a) a lower protection layer made of the silicon-containing insulation film that covers the lower wiring to come into contact with the lower wiring,

(b) a main insulating film that is laminated on the lower protection layer to come into contact with the lower protection layer, and

(c) an upper protection layer made of the silicon-containing insulation film that is

laminated on the main insulating film to come into contact with the main insulating film,

wherein both the lower protection layer and the upper protection layer are made of the silicon-containing insulation film.

17. (Withdrawn) A semiconductor device according to claim 16, wherein the main insulating film is anyone selected from a group consisting of an SiOF film and a porous insulating film.

18. (Withdrawn) A semiconductor device according to claim 16, further comprising:

an opening portion formed to perforate the interlayer insulating film; and

a side-wall protection layer made of the silicon-containing insulation film is formed on a side wall of the opening portion,

wherein the lower wiring and the upper wiring are connected via the opening portion.

19. (Currently Amended) A semiconductor device manufacturing method comprising:

forming wiring on a surface of a substrate;

preparing a film-forming gas comprising, (1) at least one member selected from the group consisting of ~~alkoxy compounds having Si-H bonds and~~ siloxane compounds having Si-H bonds and (2) at least one oxygen-containing gas selected from the group consisting of O_2, N_2O, NO_2, CO, CO_2, and H_2O;

converting the film-forming gas to a plasma;

contacting the surface of the substrate with the plasma to form a silicon-containing barrier insulating film directly on the wiring substrate; and

forming a porous insulating film by plasma enhanced CVD or forming a SiOF film, as an interlayer insulating film, directly on said barrier insulating film.

20. (Previously Added) A film-forming method according to claim 1 wherein (1) is TMS and (2) is N_2O and wherein the volumetric ratio of N_2O/TMS is about 30:1.

21. (Cancelled)